CLAIMS

1. A method of determining the optimal coefficients $C_{i,j}$, i being a row index varying from -P to +P and j a column index varying from -Q to +Q, P and Q being positive integers, of a distance transform chamfer mask providing estimations of distance between pixels of an image, said coefficients being approximations, to within a multiplicative scale factor n, n being a positive integer, of the distances of an image pixel subjected to the analysis of the chamfer mask with respect to the image pixels that are closest in the various so-called pixel directions of the mask, each coefficient being associated with the pixel of the mask whose distance it represents, and the determination consisting of a choice, for each coefficient, of a value selected from among a set of candidate values for the coefficient considered, said method being characterized in that it uses, as choice criteria:

- the maximum distance estimation error rate caused by the choice of a candidate value for a coefficient, in the estimations of distances of the image pixels aligned on an axis of displacement of the image corresponding to the direction going from an origin source pixel for the distance measurements that is subjected to the analysis of the chamfer mask to the pixel of the mask associated with the coefficient considered, and
- the mxaimum distance estimation error rate caused by the choice of two candidate values for a pair of coefficients, in the distance estimations of the image pixels contained in an angular sector of the image, delimited by two axes of displacement of the image corresponding to the directions going from the source pixel subjected to the analysis of the chamfer mask to the two pixels of the mask that are associated with the coefficients considered.

2. The method as claimed in claim 1, applied in the presence of a prescribed maximum error rate x%, characterized in that it comprises the following steps:

- calculation, as a function of the multiplicative scale factor n, of the pairs $A_{i,j}$ of integer values corresponding to the under- and over-approximations of each of the distances of the pixels of the mask with respect to the pixel subjected to the analysis of the mask, the integer values of a pair $A_{i,j}$ being candidates for the coefficient $C_{i,j}$ of the chamfer mask assigned to the pixel of the mask of which they are an approximation of the distance,
- adoption of a pixel of the image as origin source pixel for the distance measurements,
- calculation, for each candidate integer value for a coefficient, of the distance estimation error rate for image pixels aligned on an axis of displacement of the image corresponding to the direction going from an origin source pixel for the distance measurements that is subjected to the analysis of the chamfer mask to the pixel of the mask associated with the coefficient considered,
- first sort operation among the candidate integer values consisting in eliminating those for which the axis error rate exceeds the maximum allowable error rate x%,
- stopping of the determination of the coefficients of the chamfer mask as soon as the two integer values of one of the pairs $A_{i,j}$ are eliminated,
- if all the initial pairs $A_{i,j}$ retain at least one integer value after the first sort operation, continuation of the determination of the coefficients of the mask by splitting the chamfer mask and the image into 2(P+Q) mutually

contiguous oriented angular sectors S_k having as vertex, the pixel under analysis and, as sides, axes of displacement of the image corresponding to the direction going from the source pixel subjected to the analysis of the chamfer mask to a pixel of the mask, and encompassing no other pixel of the mask,

- calculation, for each angular sector S_k and for each binomial of candidate integer values for the two coefficients associated with the two pixels of the mask that are placed on the sides of the angular sector S_k considered of the distance estimation error rate for pixels of the image belonging to the sector S_k considered,
- second sort operation among the binomials of candidate integer values for two coefficients associated with two pixels of the mask that are placed on the sides of an angular sector S_k consisting in rejecting those for which the axis error rate exceeds the maximum allowable error rate x%,
- construction, on the basis of the binomials of integer values arising from the second sort operation, of a combination of candidate integer values for each of the coefficients of the chamfer mask,
- testing of the result of the construction, if it was not possible to construct any combination stoppage of the determination of the coefficients of the chamfer mask,
- if it was possible to construct at least one combination, adoption of one of them for the coefficients of the chamfer mask.

3. The method as claimed in claim 2, characterized in that it furthermore comprises a step of verification of compliance with the conditions of U. Montanari by the combination adopted following the construction step.

4. The method as claimed in claim 2, characterized in that the construction, on the basis of the binomials of integer values arising from the second sort operation, of a combination of candidate integer values for each of the coefficients of the chamfer mask is done progressively, taking the coefficients in the order of the angular sectors.

5. The method as claimed in claim 2, characterized in that it is iteratively repeated with an increase in the maximum error rate x% prescribed each time that it ends in a failure, either following the first sort operation, or following the second sort operation.

6. The method as claimed in claim 2, characterized in that it is iteratively repeated with an increase in the multiplicative scale factor n each time that it ends in a failure, either following the first sort operation, or following the second sort operation.

7. The method as claimed in claim 2, characterized in that it is applied with a maximum initial prescribed error rate x_0% that is small enough for it not to end and that it is repeated while progressively increasing the maximum prescribed error rate x% until the construction step ends with a combination of candidate integer values for all the coefficients of the chamfer mask.

8. The method as claimed in claim 1, characterized in that it comprises the following steps:

- calculation, as a function of the multiplicative factor n, of the pairs $A_{i,j}$ of integer values corresponding to the under- and over-approximations of each of the distances of the pixels of the mask with respect to the pixel subjected to the analysis of the mask, the integer values of a pair $A_{i,j}$

being eligible for the coefficient $C_{i,j}$ of the chamfer mask assigned to the pixel of the mask of which they are an approximation of the distance,

- adoption of a pixel of the image as origin source pixel for the distance measurements,
- calculation, for each candidate integer value for a coefficient, of the distance estimation error rate for image pixels aligned on an axis of displacement of the image corresponding to the direction going from an origin source pixel for the distance measurements that is subjected to the analysis of the chamfer mask to the pixel of the mask associated with the coefficient considered,
- assigning to each candidate integer value, in the guise of notation, of the axis error rate corresponding thereto,
- calculation, for each angular sector S_k and for each binomial of candidate integer values for the two coefficients associated with the two pixels of the mask that are placed on the sides of the angular sector S_k considered, of the distance estimation error rate for pixels of the image belonging to the sector S_k considered,
- assignment, to each binomial of candidate integer values that served for the calculation of a sector error rate, of a notation consisting of the highest value of the sector error rate corresponding thereto and of the axis error rates associated with the candidate integer values of which it is composed, and
- construction of a combination of candidate integer values for each of the coefficients of the chamfer mask, on the basis of the binomials of integer values having the smallest possible notations.

9. The method as claimed in claim 8, characterized in that it furthermore comprises a step of verification of compliance with the conditions of U. Montanari by the combination adopted following the construction step.

10. The method as claimed in claim 8, characterized in that the construction, on the basis of the binomials of integer values, of a combination of candidate integer values for each of the coefficients of the chamfer mask is done progressively, taking the coefficients in the order of the angular sectors.

11. The method as claimed in claim 1, characterized in that it is applied to the determination of the optimal coefficients of chamfer masks used for the estimation of the distances, with respect to a craft, of the points of a zone of the terrestrial surface where it is deployed, when this zone is represented by a two-dimensional map, derived from a terrain elevation database produced using a regular latitude and longitude meshing of the terrestrial surface.

12. The method as claimed in claim 11, characterized in that it is applied to the determination of the optimal coefficients of a chamfer mask that are valid for ranges of latitude covering that of the zone of deployment of the craft.